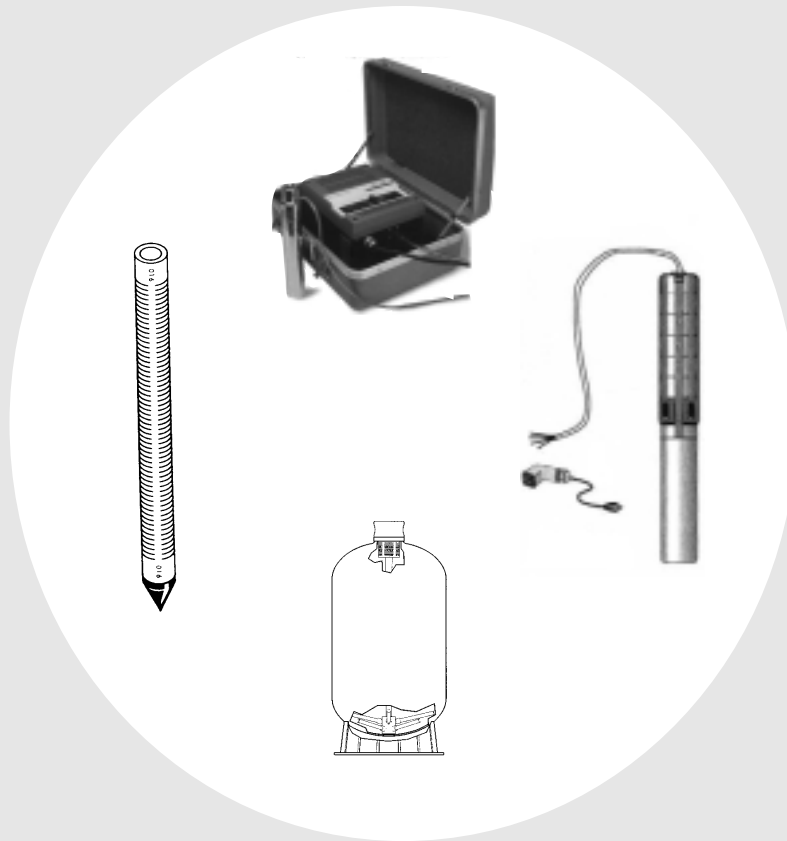
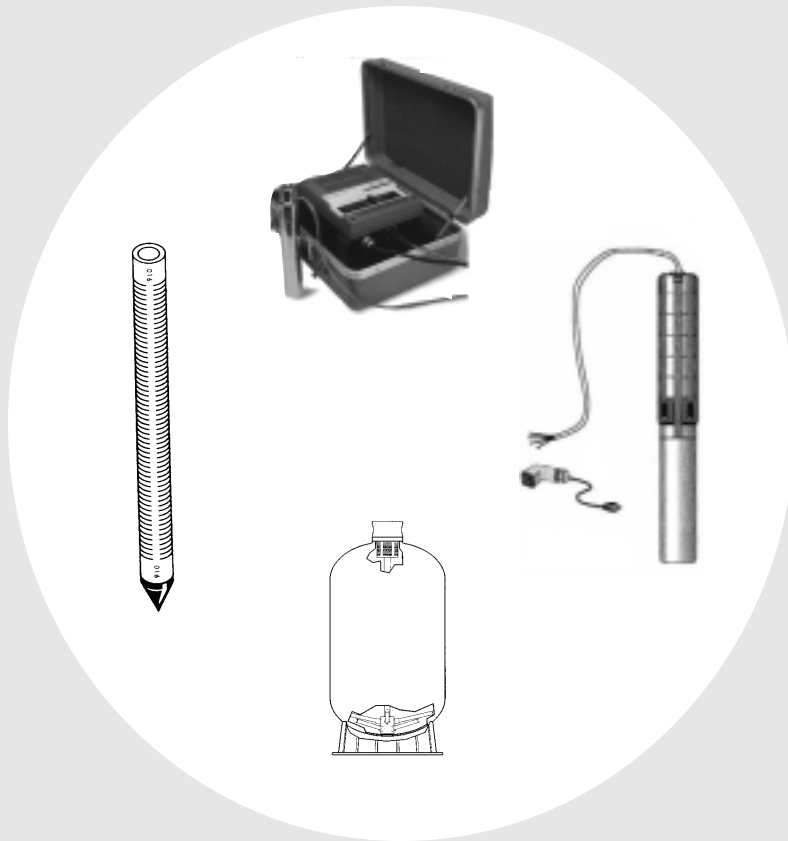


ENVIRONMENTAL



ENVIRONMENTAL





Redi-Flo

Redi-Flo Pumping Systems



**The Optimal Pumping Solution for Sampling and
Remediating Contaminated Groundwater**

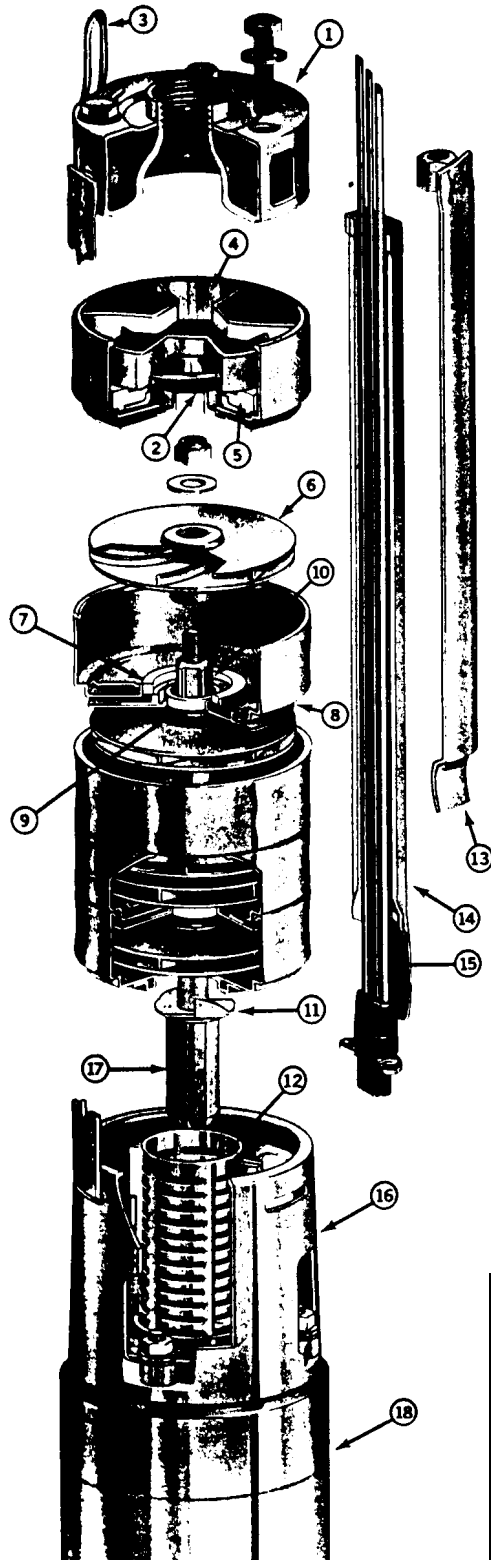


GRUNDFOS



Leaders in Pump Technology

Redi-Flo...the industry's choice for environmental applications



Environmental Engineers Specify the Pump they've Relied on for Years...GRUNDFOS

Environmental engineers specify GRUNDFOS' stainless steel and Teflon® submersible as the industry's number one choice. The importance of stainless steel and Teflon® has long been recognized and endorsed by government agencies as the accepted materials for ensuring sample integrity. With the possibility of corroded equipment producing false readings, con-

tamination-free equipment is an important safeguard against sample bias.

GRUNDFOS stainless steel and Teflon® *Redi-Flo* submersibles meet or exceed governmental guidelines for environmental equipment. And over time, through dedication and consistent quality, are proving to be the industry's choice in contamination-free submersible pumps.

Typical Applications Include Well Purging and Water Table Depression

Redi-Flo pumps are designed for reliable operation in a wide variety of applications and toxic environments. Applications include well purging, water table depression, and many other applications requiring contamination-free equipment.

Well purging eliminates contaminants to ensure that samples collected in monitoring wells are representative of the surrounding aquifer. It is very important to use stainless steel and Teflon® non-corrosive pumps to ensure accurate samples. The *Redi-Flo* submersible is designed for this need.

Another typical application is water table depression. With proper placement of the

recovery well and proper sizing of the depression pump, the movement of the hydrocarbon contamination plume can be stopped and/or reversed. After being isolated, the contaminant can be removed for treatment, re-use, or proper disposal.

Experienced GRUNDFOS engineers are on call to provide assistance in the selection and proper use of GRUNDFOS environmental pumps. The corporate commitment to quality and the durable, corrosion-resistant components make GRUNDFOS *Redi-Flo* pumps the optimum choice for environmental applications.

Materials of Construction

- | | |
|---|--|
| 1. Stainless Steel Discharge | 10. Stainless Steel Splined Shaft |
| 2. Stainless Steel Check Valve | 11. Stainless Steel Priming Inducer |
| 3. Stainless Steel Safety Cable Connector | 12. Stainless Steel Slotted Inlet Screen |
| 4. Stainless Steel Check Valve Retainer | 13. Stainless Steel Straps |
| 5. Teflon® Check Valve Seat | 14. Stainless Steel Motor Cable Guard |
| 6. Stainless Steel Impeller | 15. Teflon® Motor Cable |
| 7. Teflon® Impeller Seal Ring | 16. Stainless Steel Suction Interconnector |
| 8. Stainless Steel Chambers and Guide Vanes | 17. Stainless Steel Shaft Coupling |
| 9. Teflon® Intermediate Bearings | 18. Stainless Steel and Viton Motor |

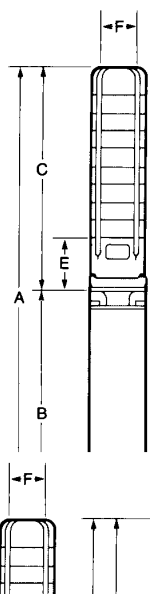
GRUNDFOS



**CALL DUFF NOW FOR
MORE
INFORMATION!
610-275-4453**

GRUNDFOS REDI-FLO4

5E PUMP TYPE	MOTOR				DIMENSIONS (IN INCHES)						NET WGHT (LBS) **	SHIP WGHT (LBS) **
	HP	SF	PH	VOLTS	OVRL LNTH	MOTOR LNTH	PUMP END LNTH	MAX. DIA.	INLET	DISCH PIPE SIZE (NPT) F		
					A	B*	C	D	E	F		
5E3	1/3	1.75	1	230	18 9/16	40 5/16	10	13 9/6	8 9/16	3 31/32	3 1/4	1
5E5	1/3	1.75	1	230	20 5/16		10		10 5/16	3 31/32	3 1/4	1
5E8	1/3	1.75	1	230	22 3/4		10		12 3/4	3 31/32	3 1/4	1
5E12	1/2	1.60	1	230	26		10		16	3 31/32	3 1/4	1
5E17	3/4	1.50	1	230	13/16		13/16		20 3/16	3 31/32	3 1/4	1
5E21	1	1.40	1	230	31 7/16		11 3/8		23 7/16	3 31/32	3 1/4	1
5E25	1 1/2	1.30	1	230	35 7/16		12		26 3/4	3 31/32	3 1/4	1
10E												
10E5	1/3	1.75	1	230	20 5/16	35 3/8	10	13 9/16	10 5/16	21	3 31/32	3 1/4
10E8	1/2	1.60	1	230	23 9/16		10		12 3/4	13/16	3 31/32	3 1/4
10E11	3/4	1.50	1	230	26 9/16		13/16		15 3/16	3 31/32		3 1/4
10E14	1	1.40	1	230	29		11 3/8		17	3 31/32		3 1/4
10E19	1 1/2	1.30	1	230	11/16		12		11/16	3 31/32		3 1/4
16E												
16E4	1/2	1.60	1	230	20 1/4	10	13 9/16	9 7/16	3 31/32	3 1/4	1 1/4	25
16E7	3/4	1.50	1	230	23 1/4	13/16		11 7/8	3 31/32	3 1/4	1 1/4	27
16E9	1	1.40	1	230	25 9/16	11 3/8		13 9/16	3 31/32	3 1/4	1 1/4	28
16E13	1 1/2	1.30	1	230	30 7/16	12		16 7/8	3 31/32	3 1/4	1 1/4	33
25E												
25E3	1/2	1.60	1	230	19 3/8	26 5/16	10	13 9/16	8 9/16	3 31/32	3 1/4	1 1/2
25E4	3/4	1.50	1	230	20		13/16		9 7/16	3 31/32	3 1/4	1 1/2
25E16	1	1.40	1	230	13/16		11 3/8		11 1/16	3 31/32	3 1/4	1 1/2
25E18	1 1/2	1.30	1	230	23 1/16		12		21 3/4	3 31/32	3 1/4	1 1/2

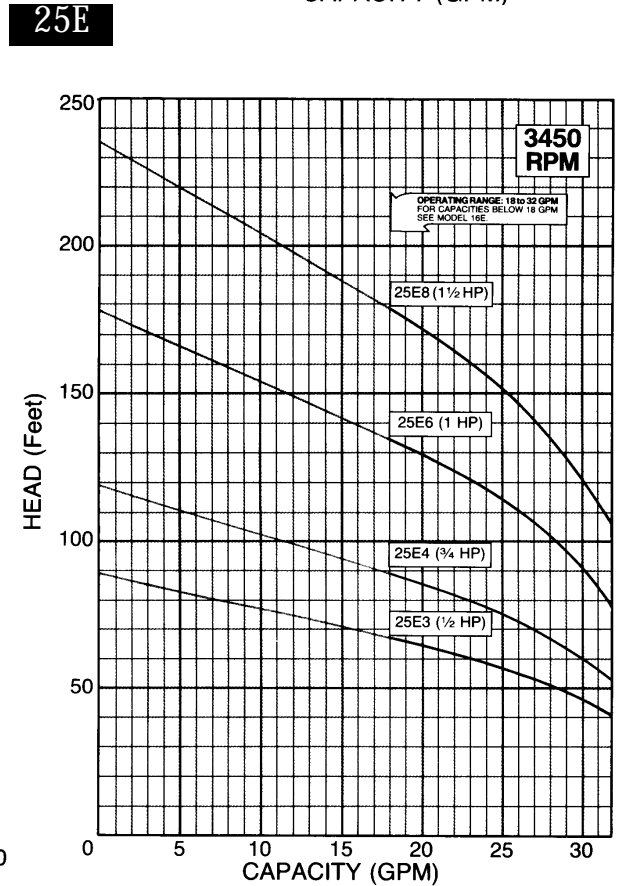
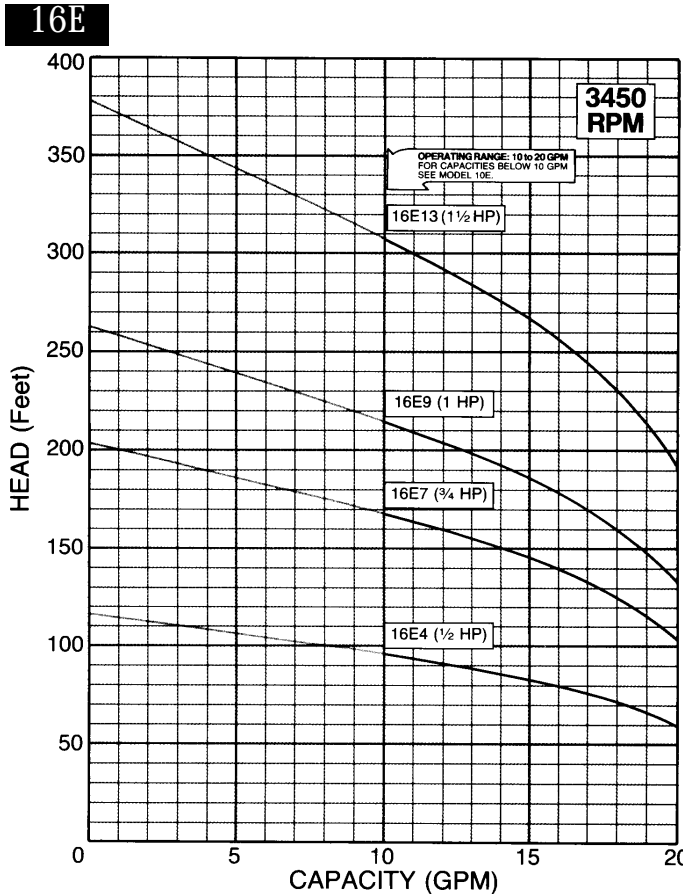
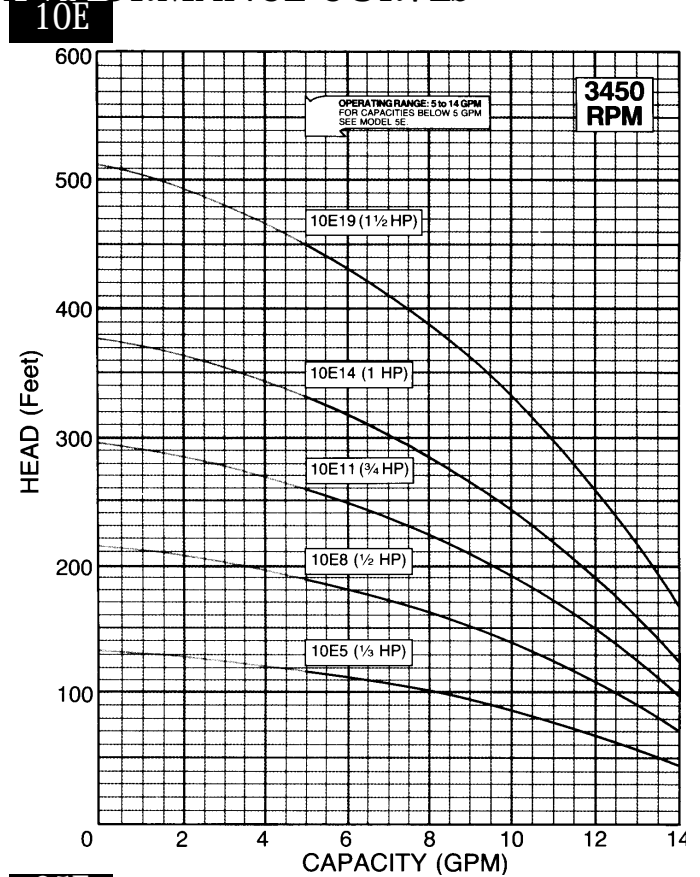
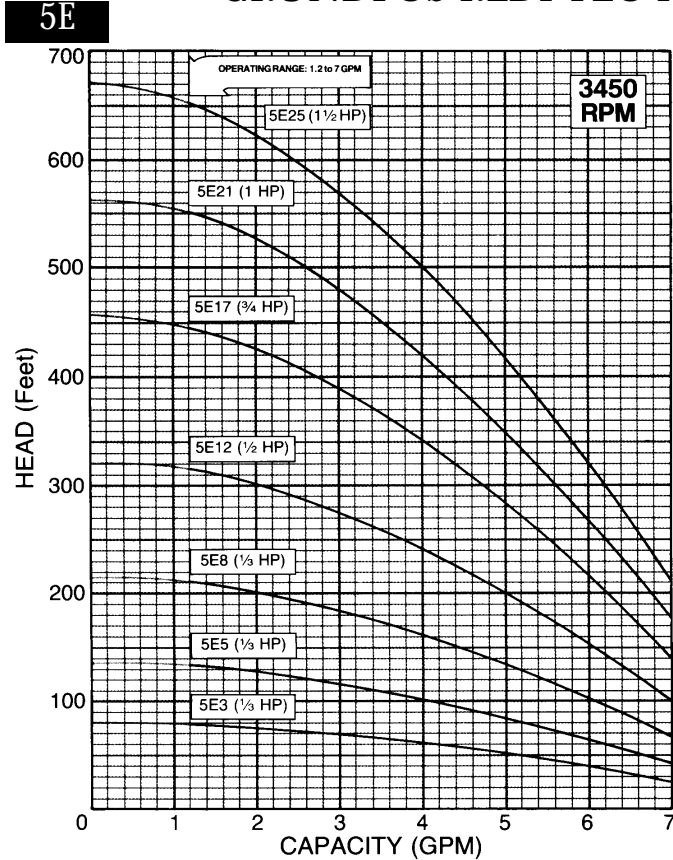


1. You must specify voltage, phase, and whether you want to operate with a control box (3 wire) or without (2 wire).

2. Any other Grundfos submersible pump or motor can be retrofitted with Teflon trim for environmental use.

*Data for Grundfos MS402E motors. **Does not include motor leads.

GRUNDFOS REDI-FLO4 PERFORMANCE CURVES



THE COMPLETE PURGE & SAMPLE SYSTEM

ONLY FROM GRUNDFOS

COMPACT DESIGN

No other pump on the market combines the compact design and power of Red-Flo2. measuring just over 11" tall, 1.8" in diameter and weighing 5.5 pounds, this compact pump ensures easy access into 2" wells.

QUALITY CONSTRUCTION

The sturdy pumping components of Red-Flo2 are made of 316 Stainless Steel and virgin Teflon. These chemically inert materials assure maximum sample integrity, limit cross-contamination, and simplify the decontaminations process.

FLEXIBLE PERFORMANCE

The potable, solid state converter eliminates the need for "throttling" or control valves.

CONTINUOUS FLOW

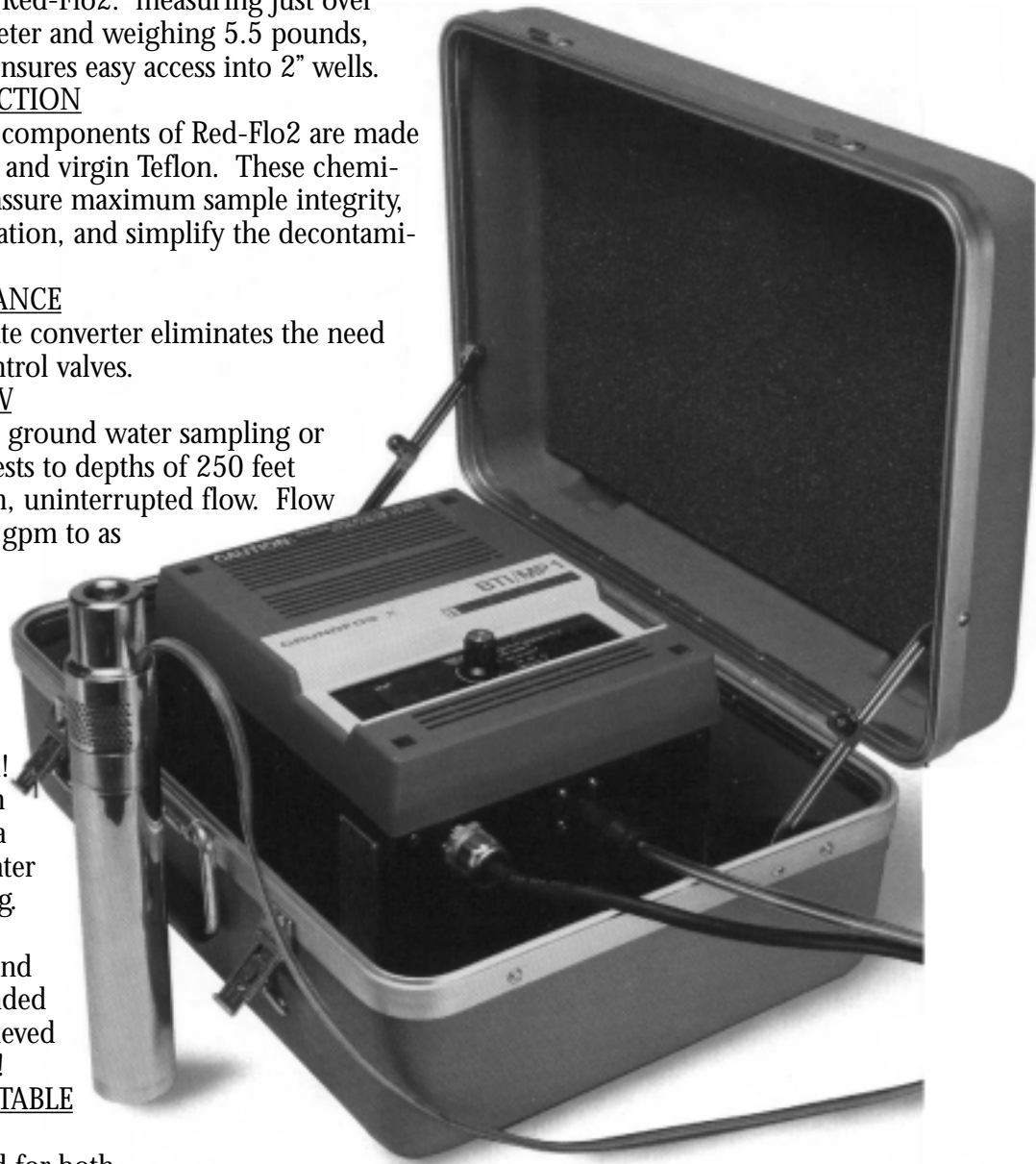
Redi-Flo2 is ideal for ground water sampling or conducting aquifer tests to depths of 250 feet because of its smooth, uninterrupted flow. Flow rates ranging from 9 gpm to as little as 100 ml/min are controlled with the simple turn of a dial.

PURGING AND SAMPLING

This pump does it all! The ingenious design of Red-Flo2 make it a natural for groundwater purging and sampling. Both high flow rates needed for purging and low flows recommended for sampling are achieved with the same pump!

DEDICATED OR PORTABLE INSTALLATIONS

Redi-Flo2 is designed for both dedicated and non-dedicated sampling installations. By attaching the pump to a reel of tubing, it becomes fully portable.



115V Converter	
FIG. NO.	PRICE
46839	

Redi-Flo2 is designed for dedicated or non-dedicated sampling installations. By attaching the pump to a reel of tubing, it becomes fully portable.

Put the power of Redi-Flo2 into your daily operation. Once this pump is part of your sampling protocol, you'll wonder how you ever got along without Redi-Flo2.

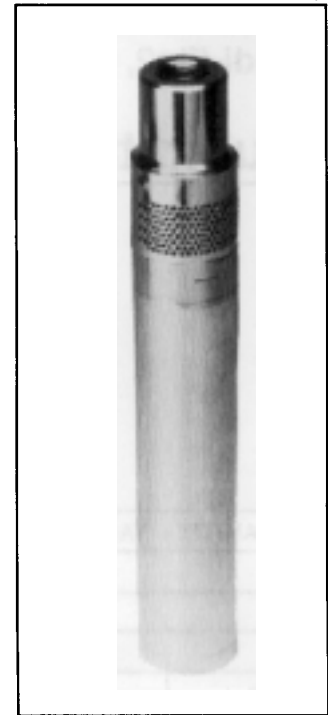
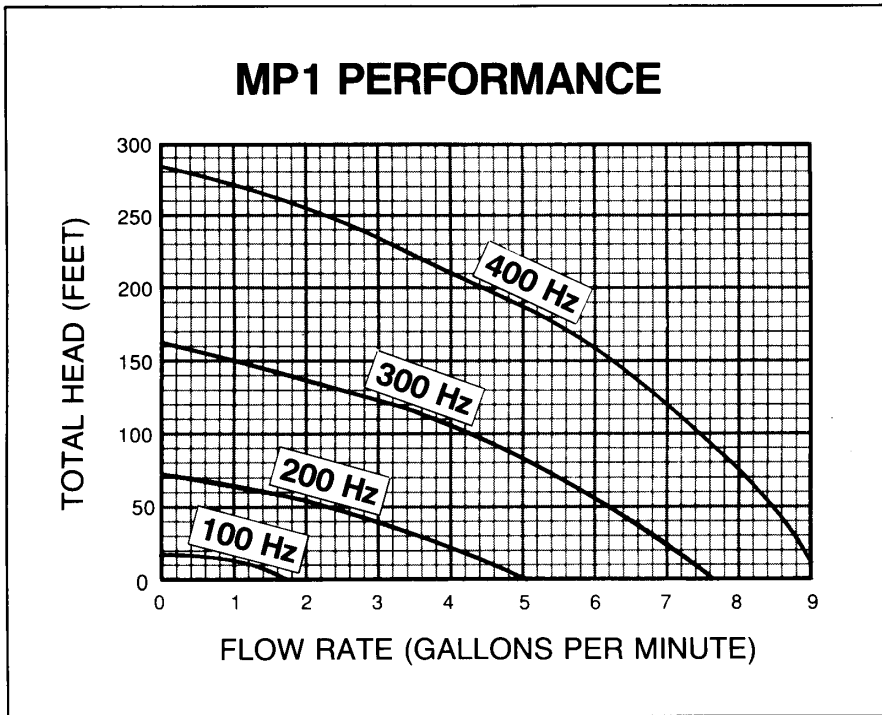
Redi-Flo2

GRUNDFOS REDI-FLO2 VARIABLE SPEED PUMP

MP1

Redi-Flo2 Environmental Pump

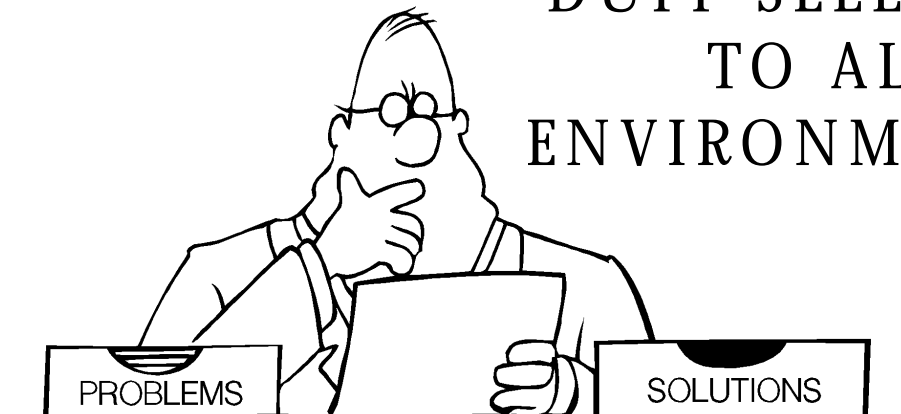
Performance Curves



MODEL #	FIG. NO.	CABLE LENGTH	PRICE
MP130	47862	30 FT	
MP150	45054	50 FT	
MP175	45055	75 FT	
MP1100	45056	100 FT	
MP1200	45057	200 FT	
MP1300	45059	300 FT	

**AVAILABLE IN 4" MODELS
CALL FOR SPECIFICATIONS**

DUFF SELLS SOLUTIONS
TO ALL YOUR
ENVIRONMENTAL NEEDS

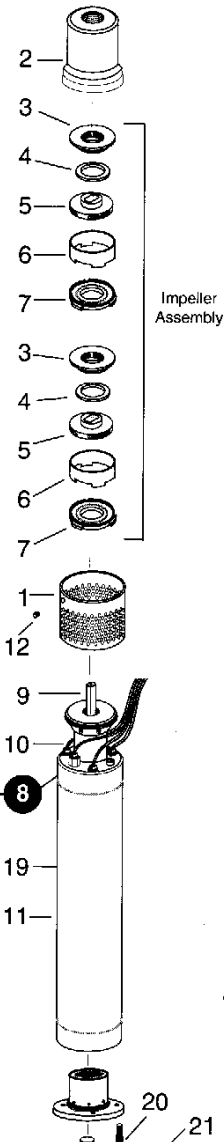


SERVICE KITS FOR REDI-FLO2

Duff now offers kits to replace the impellers and teflon components within the pump, and a kit is now available to service the components that attach the Redi-Flo2 motor lead into the motor. Many of the new kits offer individual components available in larger quantities, so that more than one pump can be serviced.

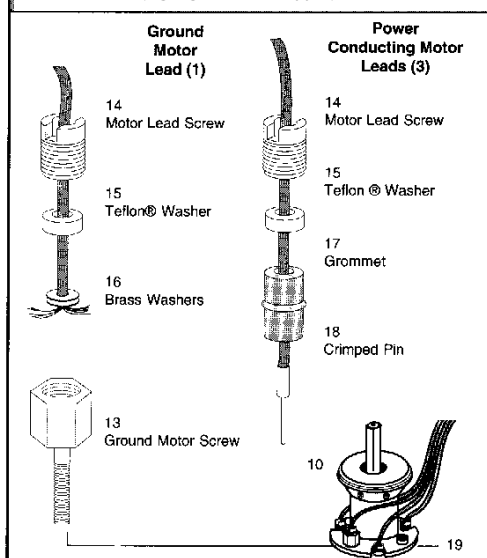
Pump Components

DESCRIPTION	USED PER PUMP	FIG. NO.
1 Inlet Screen	1	47488
2 Pump Housing 1/2" NPT	1	47489
3 Guide Vane	2	see Service Kits
4 Wear Ring	2	"
5 Impeller	2	"
6 Spacer Ring	2	"
7 Wear Plate	2	"
8 Motor Lead Assembly	4	see Pos. 13 - 18
9 Shaft	1	not available *
10 Suction Interconnector	1	47490
11 Stator Housing	1	not available *
12 Set Screw	1	see Service Kits
13 Ground Motor Screw	1	"
14 Motor Lead Screw	4	"
15 Teflon® Washer	4	"
16 Brass Washer	2	"
17 Grommet	3	"
18 Crimped Pin	3	"
19 Motor Screw (long)	2	"
20 Motor Screw (short)	6	"
21 Filling Screw w/ O-Ring	1	"

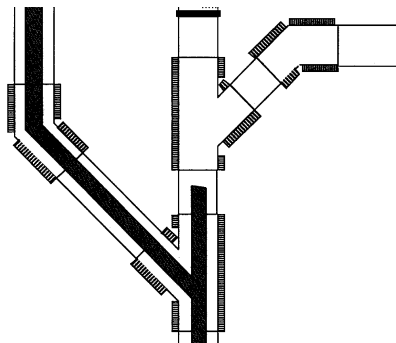


Teflon® is a registered trademark of Du Pont
 *Not economical to replace. Must purchase complete pump/motor

MOTOR LEAD ASSEMBLY



SERVICE KITS				
Diagram No.	Parts Description	No. in kit	Fig. No.	
3	Guide Vane	2	45060	
4	Wear Ring	2		
5	Impeller	2		
6	Spacer ring	2		
7	Wear Plate	2		
4	Wear Ring	4		47477
7	Wear Plate	4		
13	Ground Mtor Screw	1	47461	
14	Motor Lead Screw	4		
15	Teflon Washer	4		
16	Brass Washer	2		
17	Grommet	3		
18	Crimped Pin	3		
5	Impeller	2	47478	
12	Set Screws	25	47479	
14	Motor Lead Screws	12	47480	
15	Teflon Washer	25	47481	
16	Brass Washer	25	47482	
17	Grommet	25	47483	
18	Crimped Pin	50	47484	
19	Motor Screw (long)	25	47485	
20	Motor Screw (short)	25	47486	
21	Filling screw with Oring	5	47487	



DOUBLE CONTAINMENT PIPING SYSTEMS

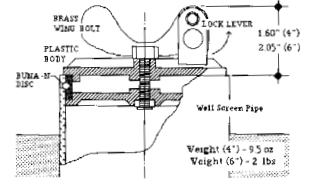
Call for Quotes!

610-275-4453

MONITORING WELL ACCESSORIES

2", 4" and 6" LOCKING PLUG.

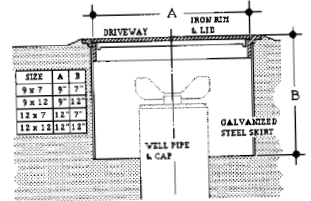
One piece watertight temperproof. Bright plastic housing, brass wing-bolt, buna-N disc, and SS lock lever. Unit is made to plug, seal and lock-in-place on a 2", 4" or 6" pupe (sch 40 PVC) without special preparations to the pipe. "TEST WELL" warning is molded to the cap.



BASIC STYLE - TEST WELL MANHOLE

Regular access, non-watertight, economical. Consists of a cast iron lid and cast iron rim riveted to a galvanized sheet metal skirt. "TEST WELL" warning is cast directly on the lid. This manhole provides a simple economical box for monitoring wells in cases when 'limited access' or 'water-tight' features are not needed.

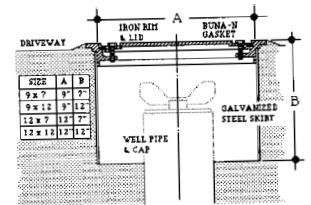
AVAILABLE SIZES: 9"x7", 9"x12", 12:x7", 12"x12".



LIMITED ACCESS MANHOLE

Limited access, weather resistant, built to last. Consists of a cast iron lid and rim, replaceable "Buna-N gasket, galvanized sheet metal skirt, and stainless steel bolts. Lugs on inside of body rim are threaded for bolts to draw lid down tight. Bolted cover provides weather tight seal and 'limited access' feature.

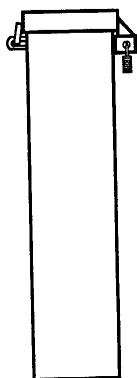
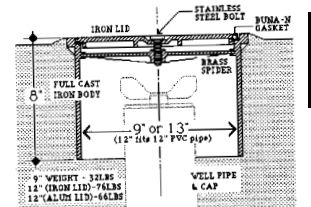
AVAILABLE SIZES: 9"x7", 9"x12", 12:x7", 12"x12".



WATERTIGHT MANHOLE

True watertight, limited access, top-of-the-line. Consists of a full-cast, one-piece iron body and skirt, cast iron lid, brass spider, replaceable Buna-N gasket and stainless steel bolt. A brass ID plate is provided and permanent warning symbol affixed to the cover. The best of the line, made to provide many years of service.

AVAILABLE SIZES: 9", 12" and 12" WITH ALUMINUM COVER!



STEEL WELL PROTECTORS

All sizes in stock and ready for immediate shipment!

For 2" through 28" wells!



ENVIRONMENTAL PIPE

All screens & casing hermetically sealed (unless otherwise specified).

Custom manufacturing and perforating to your specifications.

PVC flush joint threaded well screen & casing - 1/2" to 14".

Manholes and locking well plugs.

Plain end well screen - 1/2" to 20"

HDPE flush joint threaded well screen & casing.

Slot sizes from .006 to .250.

Stainless steel flush joint well screen and casing.

Steel well protectors

APPLICATIONS:

Landfills, mines, septic and sewage systems, industrial drainage...USE YOUR IMAGINATION!

STANDARD AND NON-STANDARD CONFIGURATIONS ALWAYS AVAILABLE. CALL FOR QUOTES!

PERFORATED PIPE

With engineers requiring more and more complex specifications for drainage problems, the days of just using "pipe with holes in it" are over. Use perforated pipe to ensure desired results.

Available in PVC Types I and II, Polyethylene (HDPE), and fiberglass, our perforated pipe is customized to meet your specifications.

Primarily used for soil drainage, the varied forms of usage include highway underdrains, leachate collection systems, and septic leach fields.

LENGTH: Standard lengths of 10', 13' and 20' (241" max.).
Custom lengths available up to 40'.

PIPE SIZES: Standard sizes from 3" to 12" nominal pipe size.
Smaller and larger sizes available.

HOLE SIZES: Standard sizes from 1/4" to 1". Larger holes available.

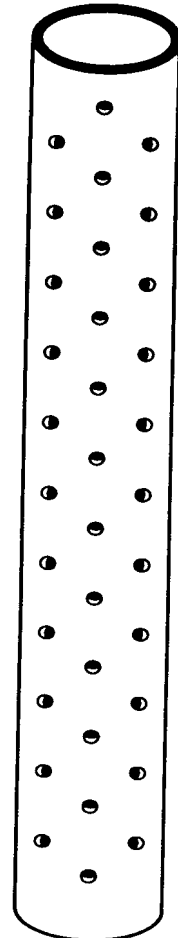
HOLE SPACING: From 1 1/2" to 12" (center to center).
Smaller and larger spacings available.

NO. OF ROWS: As per your specifications.

PATTERNS: Staggered or non-staggered.

PIPE SPECS: PVC SCH 40, 80, 120 and C-900
SDR 21, 26, 35. Various HDPE SDR's. Fiberglass.

END FITTINGS: Plain x Plain, Bell & Gasket, Bell and Spigot or Flush Joint Threaded.



ENVIRONMENTAL PIPE

SCH. 40 PLAIN X POINT WELL POINTS

PIPE SIZE	SLOT SIZE	SPACING	# ROWS
1-1/4"X5'	.012	3/16"	3
	.014		
	.016		
2"X5'	.012	3/16"	3
	.014		
	.016		

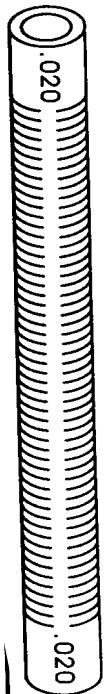
SCH. 80 PLAIN

PIPE SIZE	SLOT SIZE	SPACING	# ROWS
1-1/4"X5'	.012	3/16"	3
	.014		
	.016		



SCH. 40 PLAIN END WELL SCREEN

PIPE SIZE	SLOT SIZE	SPACING
1 1/4"X10'	.010-.020	3/16"
1 1/2"X10'	.020	3/16"
2"X10'	.006 & .008	3/16"
2"X10'	.010 - .020	3/16"
3"X10'	.010 & .020	3/16"
4"X10'	.006 & .008	3/16"
4"X10'	.020	3/16"
4"X10'	.010 - .250	1/4"
6"X10'	.020 - .250	1/4"
6"X20'	.020 - .250	1/4"
8"X10'	.020 - .250	1/4"
8"X20'	.020 - .250	1/4"
10"X10'	.020 - .250	1/4"
10"X20'	.020 - .250	1/4"
12"X10'	.020 - .250	1/4"
12"X20'	.020 - .250	1/4"



FLUSH JOINT PIPE AND CASING

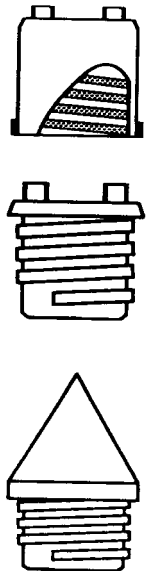
2" - 4" SCH. 40
SLOT SIZES .010 & .020

PIPE SIZE	SCREEN SPACING
2"X2'	3/16"
2"X5'	
2"X10'	
2"X2'	Casing
2"X5'	
2"X10'	
3"X5'	3/16"
3"X10'	
3"X2'	
3"X5'	
3"X10'	
4"X2'	1/4"
4"X5'	
4"X10'	
4"X2'	Casing
4"X5'	
4"X10'	



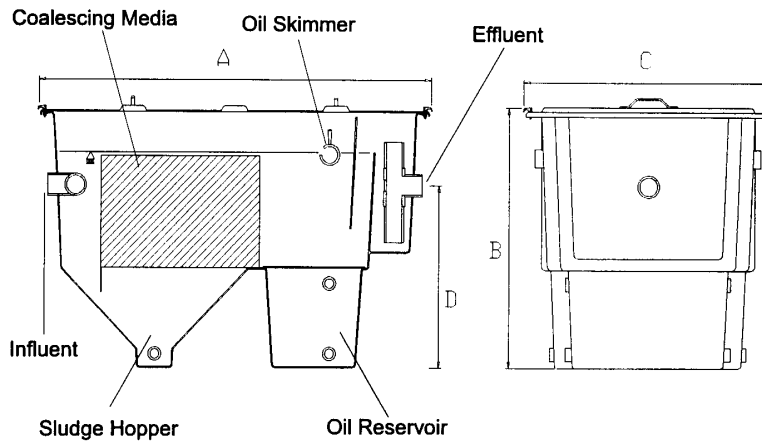
FLUSH THREADED FITTINGS

- 2" Plugs/Caps
- 2" Points/Male
- 2" Points/Female
- 2" Lifting Bail M/F
- 2" FJT Adapters
- 3" Flugs/Caps
- 3" Points/Male
- 3" Points/Female
- 4" Plugs/Caps
- 4" Points/Male
- 4" Points/Female
- 4" Lifting Bail M/F
- 4" FJT Adapters



OIL/WATER SEPARATOR

Dyna-Pak Fiberglass Oil/Water Separator



TYPICAL APPLICATIONS

Industrial Wastewater Treatment
 Chemical Processing Industries
 Petroleum Refinery
 Light & Heavy Manufacturing
 Ground Remediation
 Metal Finishing Industries
 Food Processing and Rendering
 Equipment Washpad Recycling

STANDARD UNIT DIMENSION CHART

MODEL	A LONG Inches	B TALL Inches	C WIDE Inches	D ELEV Inches	INLET FITTING (inches)	OUTLET FITTING (inches)	OIL OUTLET FITTING (inches)
DP002	64	36	31	19	2	2	2
DP004	76	39	31	21	2	2	2
DP008	76	51	31	33	2	2	2
DP012	76	51	43	33	3	3	3
DP016	76	49	55	33	3	3	3
DP024	88	57	55	39	4	4	3
DP036	88	69	55	48	4	4	3

ACCURATE SIZING

QUALITY MANUFACTURING

MODELING SOFTWARE

BEST VALUE

Integral Oil & Sludge Storage

Wide Variety of Accessories

Wide Selection of Media Types

Flow Rates from 1 to 150 GPM

Standard & Custom Configurations

OIL/WATER SEPARATOR SIZING CHART

MODEL	TYPICAL FLOW RATE GPM	TOTAL SEPARATOR CAPACITY (gals)	PROJECTED SURFACE AREA 1/2" PLATE SPACING	PROJECTED SURFACE AREA 3/4" PLATE SPACING	EMPTY WEIGHT (lbs.)	OIL CAPACITY (gals)
DP002	2-5	85	68	42	75	9
DP004	4-10	105	136	84	150	11
DP008	8-20	177	272	168	250	11
DP012	15-30	300	408	252	350	25
DP016	25-40	408	544	336	450	39
DP024	35-75	508	816	504	750	54
DP036	60-125	675	1224	756	1000	54

ACCESSORIES AND OPTIONS

The following accessories & options are just a few of the more popular selections available from Hydro-Flo Technologies. If you have a specific option or configuration in mind, please call. Our marketing & engineering staff can help you design the perfect oil/water separator for your application.

Platforms and Walkways

Special Fitting Configurations

Special Resin Blends & Gel Coats for Corrosive Environments

Optional Materials of Construction (Carbon Steel, Stainless Steel, Etc.)

Freeze Protection Packages

Pump Systems for Influent, Effluent, Oil & Sludge

1/2, 3/4, 1-1/4 Media Plate Spacing

PVC, CPVC, FRP, Stainless Steel, Carbon Steel Coalescing Media

**CALL DUFF COMPANY
 FOR ALL YOUR
 OIL-WATER
 SEPERATOR NEEDS!
 601-275-4453**

APPLICATIONS FOR OUR DP-SERIES OIL/WATER SEPARATORS

Automotive Industry - assembly line maintenance
Automotive Maintenance Facilities - engine washing facilities
process water
Airports - maintenance facilities
Bus Terminals - maintenance facilities
Bulk Plants - maintenance facilities
Chemical Plants - process water
Cooling Water - discharge
Compressor Blow Down - process water
Cosmetics Industry - process water
Electro Chemical Plants - rinse water
Fabricated Metal Plants - maintenance facilities
Floor Drains - process water
Food Processing Plants - removal of oil and grease from
waste water
Glass Factories - process water
Golf Courses - discharging pesticides (mostly for the pres-
sure washer)
Grinding and Honing Operations
Ground Water Remediation - removal of oil, sludge and
solids from ground water.
Ground Water Runoff - parking lot runoff
Industrial Plants - removal of oil and solids from wash
down water and waste water.
Lens Grinding and Polishing
Machining Operations - removal of cutting and tramp oil
from soluble cutting oils.
Machine Shops - process water
Marine Terminals - removal of oil and solids from wash
down water and waste water
Metals processing - maintenance facilities
Military Bases - maintenance facilities
Oil Industry (onshore and offshore) - refinery and drilling
runoff, tank cleaning, recovery of emulsified crude, recov-
ery of down hole water for stream injection

Oil Fields - maintenance facilities
Oil Production - oil removal from produced water
Oil Refineries - oil and sludge removal from process
streams and waste water.
Paving Contractors
Parking Areas
Petrochemical - oil, sludge and solids removal from process
streams and waste water
Petroleum Plants - process water, parking lot runoff
Ponds - runoff water
Power Plants - removal for transformer oil from waste
water.
Pulp and Paper Mills - process water
Railroad - Hot tanks, fueling runoff, locomotive washing
Rolling Mill Quench Oil - process water
Steam Cleaning Facilities - maintenance facilities
Steel Mills - removal of oil and solids from process water,
cooling water and waste water.
Tank Cleaning - process water
Textile Mills - process water
Tramp Oil Separation
Truck Maintenance Terminals - removal of oil and solids
from wash down water and waste water, parking lots and
retention ponds.
Utility Companies - Water from fuel washing, fuel oil cen-
trifuges, blow down water from air receivers
Vegetable Processing Plants - removal for sand and clay
from wash water
Wire Drawing Operation - process water
Wash Racks - process water
Wash/Rinse Tanks
Water Treatment Plants - flocculation removal from water

CARBON FILTRATION UNITS FOR LIQUID AND VAPOR

STANDARD EQUIPMENT

- *55 Gallon drum carbon adsorbers (metal or poly, vapor or liquid)
- *Fiberglass adsorbers
- *Powdered carbon dosing systems
- *75 psi pressure vessels - up to 12' diameter
- *40 psi low pressure vessels - up to 4' diameter
- *Vapor jumbo drum adsorbers
- *High & low pressure bag (sock) filters



OTHER FILTRATION PRODUCTS

- *Anthracite
All mesh sizes available in one cubic foot bags.
- * Filter Sand
All grades of quartz, silica and garnet in bags and bulk.
- * Quartz Filter Gravel
All grades in bags and bulk.
- *Ion Exchange Resin
Removes minerals and metals from water. All grades of gel and acrylic cationic and anionic resins.
- * Manganese Green Sand
Removes iron and manganese from water.

CUSTOM EQUIPMENT

- Activated carbon systems
 - *Dual 2000 pound to 20,000 pound skid
 - *Cross flow vapor adsorbers and roll off vapor adsorbers up to 10,000 SCFM
- Water softeners
- Demineralizers
- Sand or multi-media filters
- Air strippers
- Complete skid or trailer mounted remediation systems
- ASME coded pressure vessels with stamp
- Specialty coatings and internal
- Systems per client specifications

MEDIA

Activated carbon removes organics from air or water. Lignite, Bituminous, Peat, Impregnated and Specialty Grades available in all standard standard mesh sizes.

8X30 GRANULAR ACTIVATED CARBON FOR LIQUID FILTRATION

DWC 8x30 is a virgin granular activated carbon made from selected grades of bituminous coal. This product is specifically designed for liquid phase applications here high surface area is needed for maximum adsorption.

Properties and Specifications

PROPERTIES	VALUE	TESTING METHOD
Iodine Number	900 mg/g	AWWA B604
Abrasion Number (min.)	75	ASTM D3802
Moisture as Packed (max.)	4%	ASTM D2867
Apparent Density	0.50 g/cc	ASTM D2854
Mesh Size	8x30	U.S. Sieve
greater than 8 mesh (max.)	5%	U.S. Sieve
less than 30 mesh (max.)	5%	U.S. Sieve
Surface Area (typical)	1050 m ² /g	BET N2
Ash Content (max.)	12%	ASTM D2866

COCONUT SHELL GRANULATED ACTIVATED CARBON FOR VAPOR FILTRATION

DWC CARBON is a virgin activated carbon manufactured from select coconut shell raw material and thermally activated in a rotary kiln with a steam atmosphere. This carbon is specifically developed for vapor phase applications where it provides superior performance for recovery of low concentration contaminants and odors from the air streams and industrial gases. This carbon product has a characteristically low ash and high hardness suitable for solvent recovery applications.

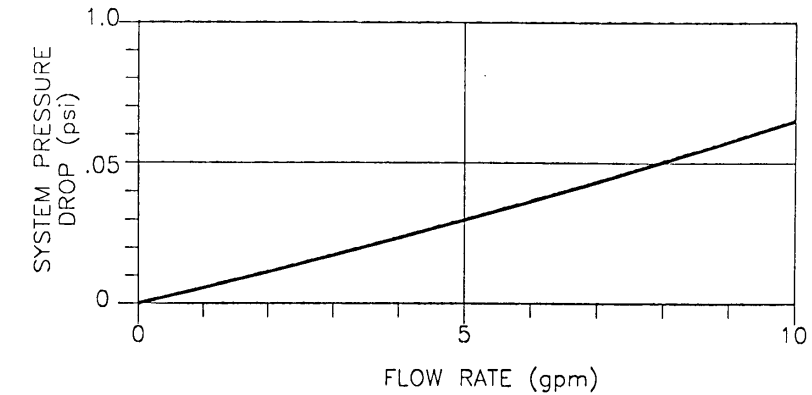
Properties and Specifications

PROPERTIES	VALUE	TESTING METHOD
Carbon Tetrachloride No. (min.)	60%	ASTM D3467
Hardness (typical)	97%	ASTM D3802
Moisture as Packed (max.)	5%	ASTM D2867
Bulk Density	0.48 g/m ²	ASTM D2854
Mesh Size	4x8	U. S. Sieve
greater than 4 mesh (max.)	5%	
less than 8 mesh (max.)	5%	
Surface Area (typical)	1150 m ² /g	BET N2
Ash Content (max.)	3%	ASTM D2866
Pore Volume (typical)	0.50 ml/g	
pH Water Extract (typical)	9.5	

LIQUID FILTRATION UNITS

24 1/2" O.D. x 34 3/4" high
UN# Rated multi-trip canister
with a lock ring open top lid

1 1/4" FPT
Connection



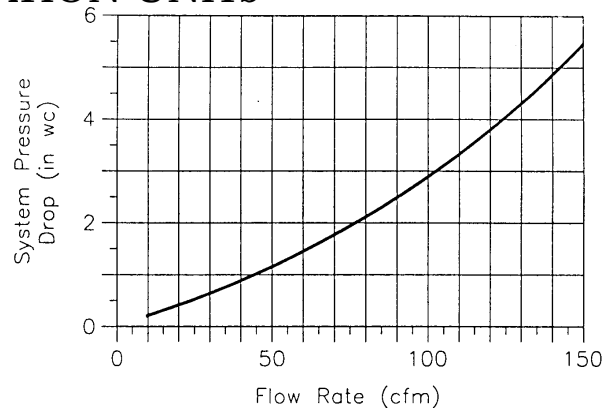
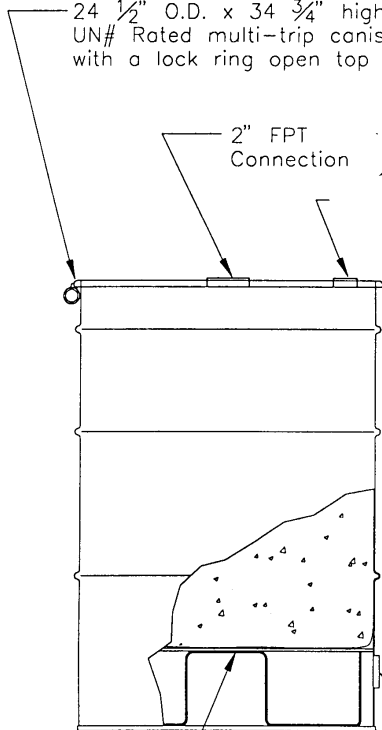
DWL200-L Series drums are 16 gauge carbon steel with an internal epoxy lining and external urethane corrosion resistant coating. Upper and lower hub and lateral distribute collection system prevents media migration and channeling, for maximum carbon utilization. Either connection can be used as the inlet/outlet, allowing for up flow or down flow operation. 10 gpm flow at 10 psi is recommended.

1 1/4" FPT
Connection

VAPOR FILTRATION UNITS

24 1/2" O.D. x 34 3/4" high
UN# Rated multi-trip canister
with a lock ring open top lid

2" FPT
Connection



DWV200-V Series drums are 16 gauge carbon steel with an internal epoxy lining and external urethane corrosion resistant coating. Upper and lower vapor plenums distribute influent air/vapor stream preventing preferential flow through a 2'-0" depth of carbon bed. Either connection can be used as inlet/outlet, allowing for up flow or down flow operation. Rated to 150 cfm, 10 psi and 10" of mercury vacuum.

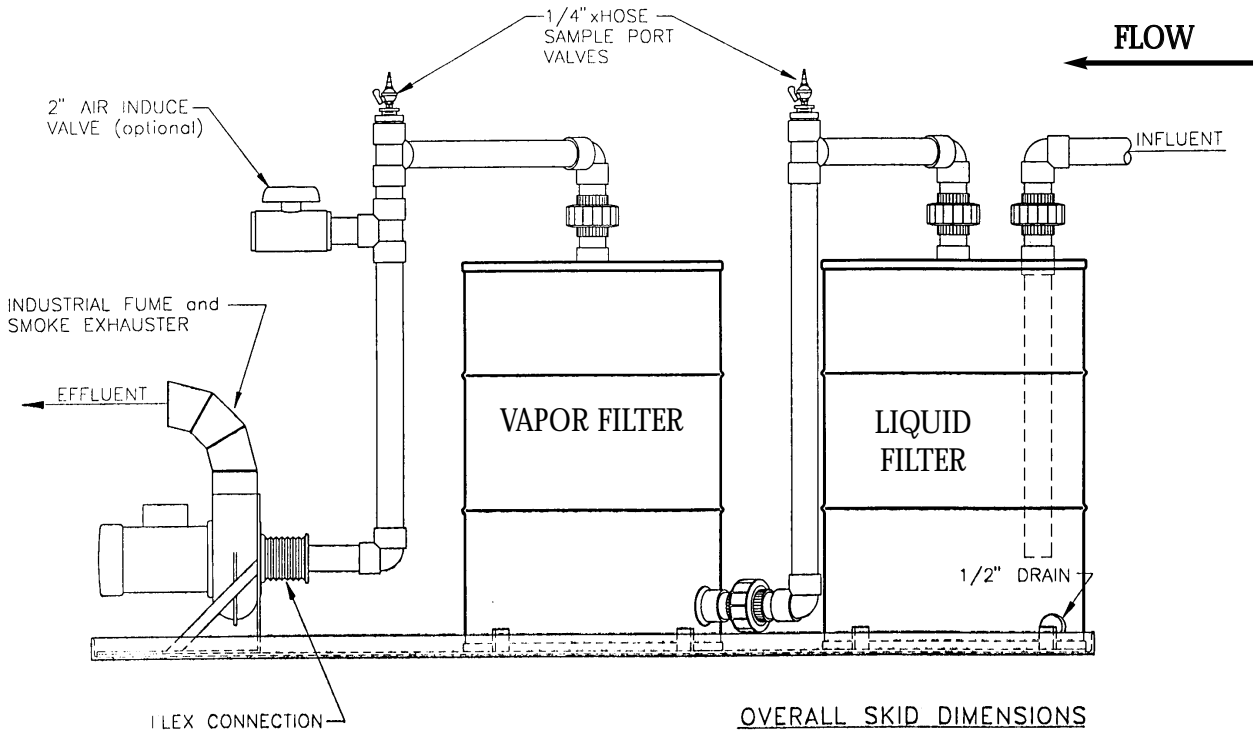
APPROX. LOADED WEIGHT = 200 lbs.

Media Support
Grid

2" FPT
Connection

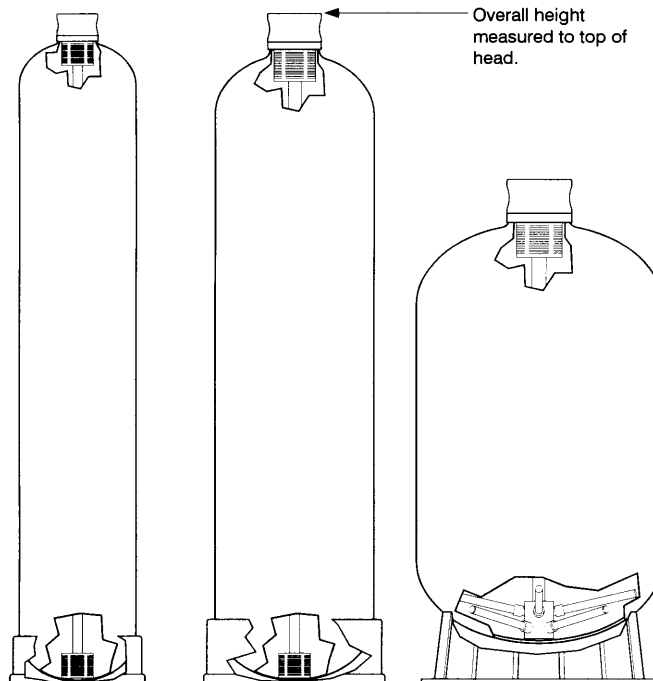
TYPICAL FILTER INSTALLATION

TYPICAL INSTALLATION



OVERALL SKID DIMENSIONS
 2-DRUM SKID - 7'-6" L x 2'-0" W x 4'-7" H
 3-DRUM SKID - 7'-6" L x 4'-0" W x 4'-7" H

**FIBERGLASS
 FILTRATION
 TANKS**



Available Options:

- Custom Sizes Designed to hold up 2000 lbs GAC
- ASME Code Stamp
- Vacuum Relief
- Higher Pressures available
- Available with or without internals
- Custom Colors
- Pressure Indicators
- Side Mounted Inlet/Outlets
- Custom Sizes
- Sight Glasses
- Extended, Tripod or Bolted Base
- Prepiped Automatic Systems
- Call for your custom configuration

**ALL SIZES,
 CONFIGURATIONS AND
 DESIGN REQUIREMENTS
 CAN BE MET!**

GEOTEXTILES

TYPICAL APPLICATIONS

- **Woven Geotextiles**

Monofilaments, High Strength, Slit Films, Custom Design and Production

- **Nonwoven Geotextiles**

3 to 30 Ounces Per Square Yard

- **Silt Fences**

Prefabricated with Posts or Fabric Only

- **Erosion Control Mats / Blankets**

Biodegradable Straw and Wood Excelsior, Permanent Turf Reinforcement, Jute Mesh

- **Sand / Grout Bags**

- **Daily Landfill Covers**

Reinforced Heavy Duty and Light Weight Disposables for Winter

- **Geogrids**

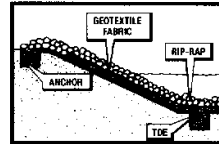
- **Geocell Containment Systems**

- **Safety / Barrier Fences**

- **Factory Fabrication**

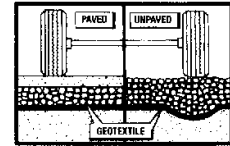
Custom Widths, Lengths, and Shapes

Erosion Control / Riprap



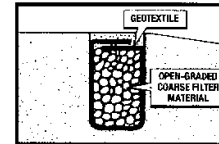
- Woven Monofilament Filter Fabrics
- Nonwovens (Non-critical Applications - Depending on Soil Conditions)

Separation / Stabilization / Reinforcement



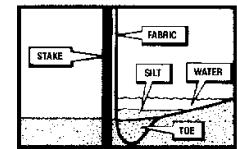
- Woven Slit Film & High Performance Fabrics
- Nonwovens (Separation Only)

Subsurface Filtration / Drainage / Septic



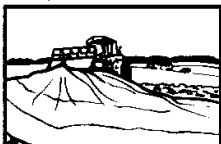
- Woven Monofilament Filter Fabrics
- Nonwovens (Non-critical Applications - Depending on Soil Conditions)

Silt Fence



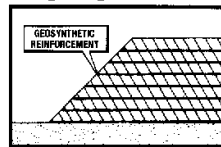
- Woven Monofilaments, Slit Films, & Specialty Sedimentation Fabrics

Daily Landfill Covers



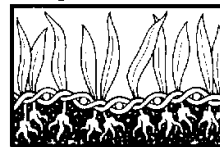
- Reinforced Heavy Duty & Light Weight Disposables for Winter Months

Steep Slopes



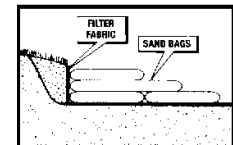
- Woven Slit Film & High Performance Fabrics
- Geogrids • Erosion Control Products

Erosion Control / Revegetation



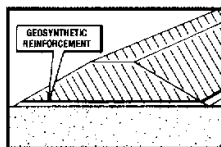
- Straw & Wood Excelsior Blankets, Permanent Turf Reinforcement, Jute, Geoc

Sand Bags (Large) / Shoreline Protection



- Woven High Performance Fabrics and Monofilament Filter Fabrics

Embankments Over Soft Soils



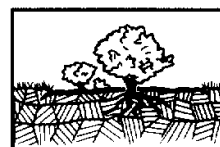
- Woven Slit Film & High Performance Fabrics
- Geogrids (With Geotextile Separator)

Geocell Containment Systems



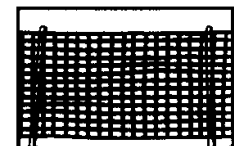
- Slopes, Channels, Walls, Shorelines, Haul Roads, Parking Areas, Driveways, Erosion Control, Vegetation

Landscape / Weed Control



- Special Light Weight Wovens & Nonwovens
- High UV Resistance

Safety / Barrier Fences



- Work Sites, Crowd / Traffic Control

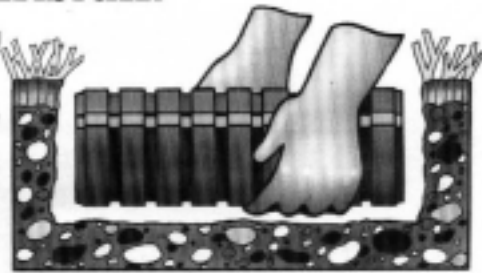
POLYETHYLENE DRAINAGE PIPE

Advantages

When you install ADS tubing, you can be sure it will provide dependable drainage for many years to come. Problems that often surface with other drainage materials simply don't occur with ADS tubing. Drainage is economically efficient because ADS tubing is:

Easy to Install.

Lightweight tubing saves time and labor. No special tools or fittings are needed. There's no waste because you simply cut coiled tubing to required length.



Unrestricted Water Intake.

Uniform slots provide unrestricted, rapid water intake and quicker drainage to handle



When you install ADS tubing, you can be sure it will provide dependable drainage for many years to come. Problems that often surface with other drainage materials simply don't occur with ADS tubing. Drainage is economically efficient because ADS tubing is:

Advantages

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Easy to Install.

Lightweight tubing saves time and labor. No special



Unrestricted Water Intake.

Uniform slots provide



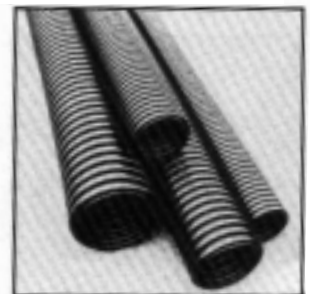
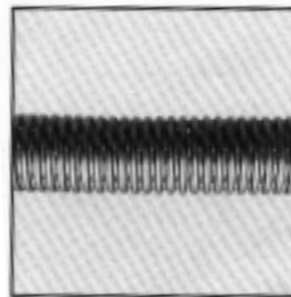
FOR ALL OF YOUR ENVIRONMENTAL NEEDS, CALL DUFF FIRST!

610-275-4453

SUGGESTED APPLICATIONS:

- *Storm Drainage systems
- *Culverts and cross drains
- *Roadway edge drains
- *Foundation drainage
- *Downspout drainage
- *Subdrainage
- *Edge drains
- *Culverts
- *Agricultural drainage
- *General drainage
- *Golf course drainage

SEE PAGE 599 FOR FULL LINE



DUFF IS A LEADING PROVIDER OF POLYETHYLENE PIPE SYSTEMS

PE 3408 EXTRA HIGH MOLECULAR WEIGHT (EHMW) HIGH DENSITY POLYETHYLENE INDUSTRIAL PIPING SYSTEM

Some of the industries using high density polyethylene pipe systems and their varied applications are:

INDUSTRIES

Agricultural (irrigation)
Chemical
Dredging
Fertilizer
Gas Distribution
General Industrial
Landfill Reclamation
Metals Extraction
Mining
Oil and Gas Production
Power Generation
Pulp and Paper
Sewage
Water Distillation

SPECIAL SERVICES

Fire Protection*
Potable Water**
Hazardous wastes
Duct

*Factory mutual certification available

**NSFpw certification available

APPLICATIONS

Acid Lines
Coal Bed Methane Drainage
Condensate Lines
Corrosive Wastes
De-watering
Drainage Lines
Fiber Optic Innerduct
Fly Ash Disposal
Ground Source Heat Pumps
Irrigation Lines
Landfill (leachate control and methane recovery)
Natural gas and Oil Lines
Process Water Lines
Relining (chemical lines and sewers)
Salt Water Intakes
Sanitary & Force Mains (gravity and pressure)
Sludge Lines
Slurry Lines
Tailings Lines
TV Cable Conduit



PIPE AND FITTINGS



SPECIAL FABRICATIONS

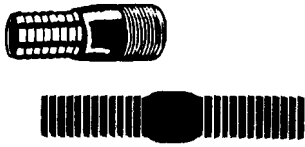
MACHINES AVAILABLE FOR SALE OR RENT



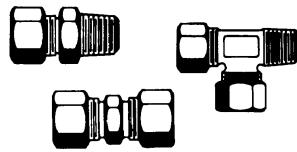
BUTT FUSION EQUIPMENT

High density for strength, stiffness, chemical resistance
Extra high molecular weight for toughness, durability, impact resistance, abrasion resistance
Broad molecular weight distribution for fusibility and ease of joining
Outstanding ESCR for durability and resistance to aggressive soils and fluids

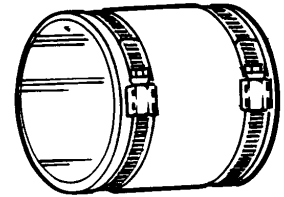
DUFF OFFERS A COMPLETE LINE OF ALL YOUR CONNECTING NEEDS



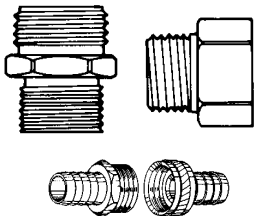
Hose insert connection for suction & layflathoses.
Steel and Brass see page 433
Plastic see page 610
Stainless Steel see page 432



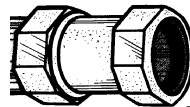
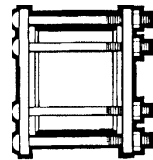
Compression fittings for tubing connections.
Brass see page 117-122
Plastic see page 574-575



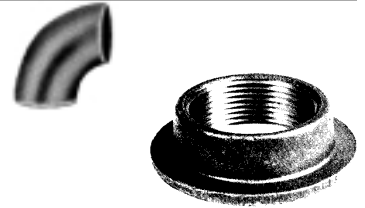
For connecting non-pressure piping.
Steel -or- plastic see page 103



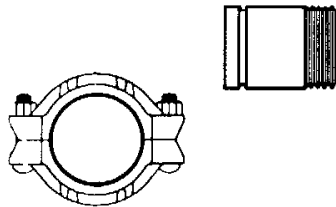
For connecting contractor and garden hose thread to pipe thread.
See page 100



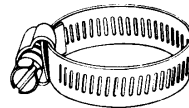
For connecting piping under pressure.
Steel or plastic see page 65-55



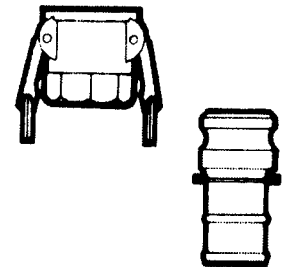
Fittings for ballards and tank fabrication.
See pages 79



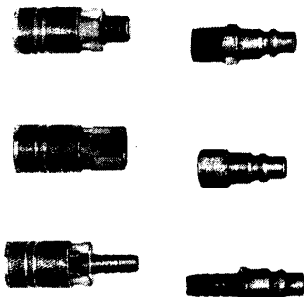
Permanent or temporary piping applications.
See page 81



Stainless Steel clampS
See page 611



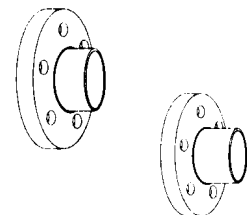
See page 618



See page 628



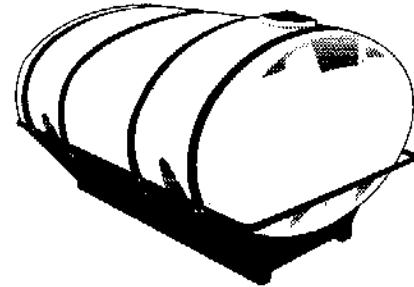
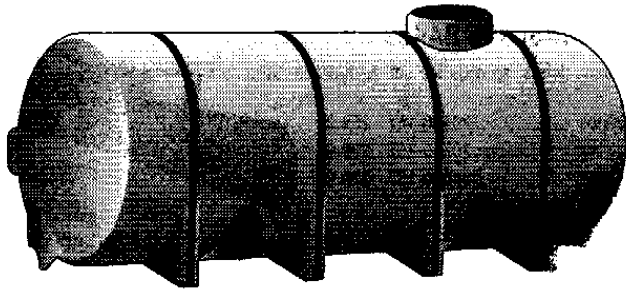
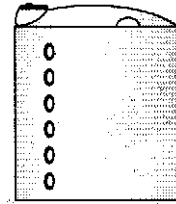
Brass Saddle Tees
See page 57



Flanges - available in PVC, CPVC, also in Steel and Cast Iron
CPVC See page 589
PVC see page 585
Cast Iron see page 59
Steel see page 77

FIBERGLASS & POLYETHYLENE TANKS

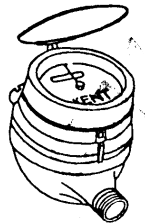
- * Fiberglass
- * Polyethylene (HDPE)
- * Cross Linked (XLPE)
- * Dual Laminate
- * Vertical & Horizontal
- * Single & Double Wall
- * Closed & Open Top
- * Flat & Cone Bottom
- * Skid Mounted Tanks



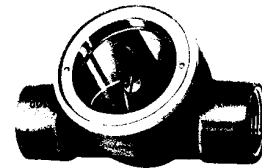
- * Low Profile Tanks
- * Bulk Storage Tanks
- * Space Saver Tanks
- * Truck Tanks
- * Sprayer Tanks
- * Tractor Mount Tanks

* Capacities to 20,000 gallons

METERS



WATER METERS AND FLOW METERS
READILY AVAILABLE
SEE PAGE 367 TO 369



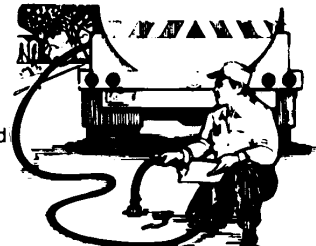
TANK TRUCK HOSE

Tube: Black nitrile synthetic rubber.

Reinforcement: High tensile steel wire between two layers synthetic textile.

Cover: Black neoprene rubber with red stripe.

Applications: Designed for handling petroleum products up to 45% aromatic under rugged suction and discharge conditions. Extremely flexible. Temperature range from -40°F to +180°F. Sizes 1 1/2", 2", 3", 4"



HEAVY DUTY TANK TRUCK HOSE

Style P1193

Tube: Black nitrile.

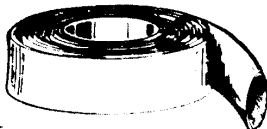
Reinforcement: 100% polyester woven around close pitch steel helical wire.

Cover: Black nitrile.

Applications: Unique construction gives this hose up to twice the working pressure of conventional tank truck hose. Highly resistant to acids and petroleum products. Light weight, crush and kink resistant. Recommended for oil exploration/drilling, waste hauling. Temperature range from -20°F to +180°F. Sizes 1 1/2", 2", 3", 4"

SEE ALL
OUR HOSES
ON PAGES
616-617

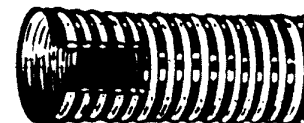
PVC SUCTION HOSE



RUBBER SUCTION HOSE



PVC DISCHARGE HOSE



HARMSCO UP-FLOW CARTRIDGE FILTRATION

A Design So Superior It's Patented!

Harmsco's up-flow design out performs conventional filters! Fluid enters the filter under pressure and flows through the filter media, holes in the center tubes and perforations in the rods that hold the cartridges in place. As the fluid continues its path, it flows upward past the top seal where it spills over into the standpipe as it hits the filter's domed lid. The top of the standpipe is at the high point of the filter. Also, note the the filter cartridges are sealed at the bottom and held in place with threaded pipe caps.

UP-FLOW Stainless Steel Industrial "filter Housings

Cartridge filters (304 stainless steel, CPVC standpipes, CPVC cartridge holders and threaded caps)

Cartridge cluster filters (to remove entire set of cartridges at one time for cleaning or replacement)

***No Air Entrapment** Large capacity filters with cartridge filters for easy cartridge removal

***No Vents**

***No Fluid By-Pass During Servicing**

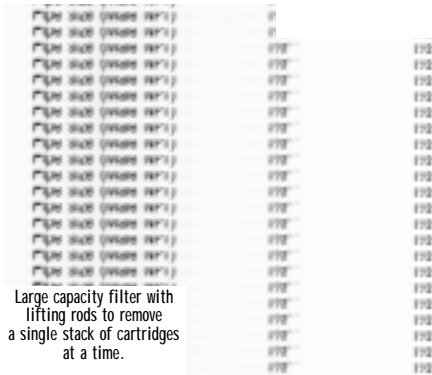
***Electro-Polished**

***Fail-Safe Lids**

***Compact Design**

***Pressure Rated to 150 psi**

***Cartridge Cluster Filters**



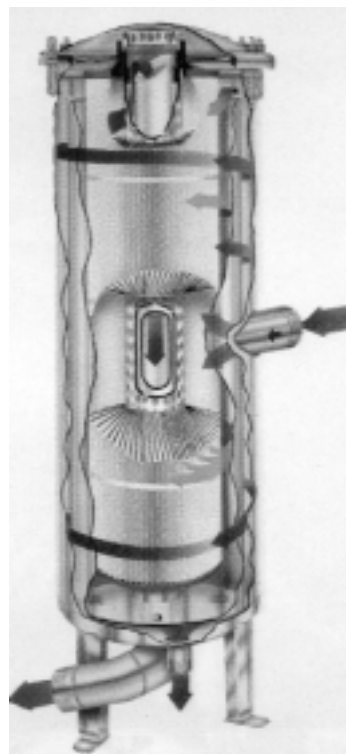
Cartridge cluster filter with easy cartridge removal for cleaning or replacement.



THE REVOLUTIONARY HARMSCO HURRICANE

COMBINES THREE FILTRATION TECHNOLOGIES
IN A SINGLE COMPACT DESIGN

CENTRIFUGAL SEPARATION TO REMOVE DENSE PARTICLES FROM LIQUIDS



UP FLOW CARTRIDGE FILTRATION AND ANGLES PLEATS FOR LIGHT-WEIGHT PARTICLE REMOVAL

HARMSCO STAINLESS BAG FILTER



PLEASE SEE PAGE 485-486 FOR BAG FILTERS!

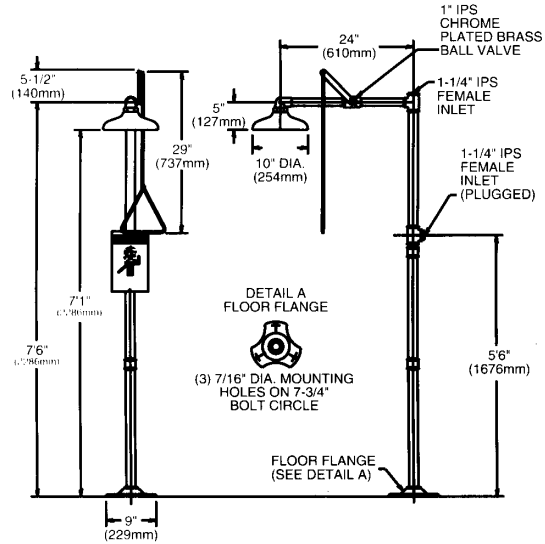
SAFETY STATIONS

EYE/FACE WASHES
AND SHOWER STATIONS

**FOR SPECIFIC MODELS, SEE
PAGE 251 OR CALL FOR
QUOTE!**

AVAILABLE

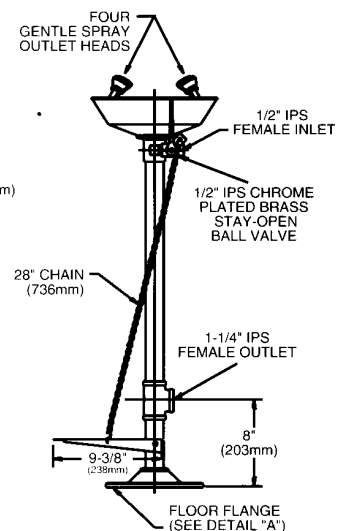
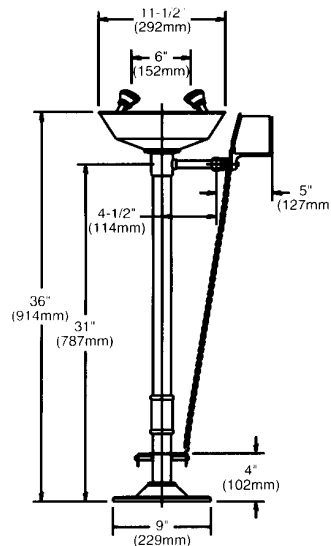
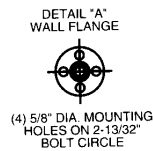
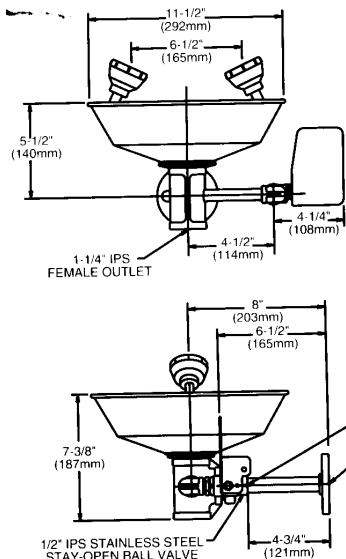
- * Corrosion resistant PVC
- * Corrosion resistant stainless steel
- * Freeze resistant
- * Walk through decontamination
- * Eye, face and body spray units



SPEAKMAN
The Quality Leader Since 1869



GUARDIAN EQUIPMENT



GLOSSARY

ABRASION: Migration of foreign material which enters the fluid stream from system components that wear from close tolerances, vibration or shock.

ABRASIVES: hard structurally strong solid.

ABSORB: To take up by cohesive, chemical or molecular action.

ABSORBENT: A filter medium that holds contaminants by mechanical means. When one substance soaks completely through another, sometimes undergoing a chemical change.

ACIDITY: The quality, state or degree of being acid. In lubricating oils, acidity denotes the presence of acid-type constituents whose concentration is usually defined in terms of a neutralization number. The constituents vary in nature and may or may not markedly influence the behavior of the fluid.

ADDITIVE: A material, usually chemical, added to a product to impart new or unusual characteristics or to improve existing characteristics.

ADSORBENT: A filter medium primarily intended to hold soluble and insoluble contaminants on its surface by molecular adhesion - no chemical change.

ADSORPTION: The natural phenomenon of a gas, vapor, or liquid being attracted to and held on the surface of a solid. To some extent adsorption takes place on any solid surface, but certain materials have sufficient adsorbent capacity because of the finely divided material to make them useful in such industrial applications as the purification and separation of gasses and liquids.

AGGREGATE: A relatively stable assembly of dry particles formed under the influence of physical forces.

AMBIENT: Surrounding. For example, ambient operating temperatures of a vessel is temperature essentially the same as that surrounding the vessel.

ASME: American Society of Mechanical Engineers.

ATMOSPHERIC PRESSURE: The force exerted on a unit area by the weight of the atmosphere.

ATOM: Smallest particle of an element which retains properties of the element. Example: Carbon Atom (C).

BACK PRESSURE: In filter use, resistance offered by filter, usually measured in PSI.

BACKWASH: To clean a filter element by reversing the direction of flow through it.

BLOTTER TEST: A visible means of checking oil clarity; one drop on a blotter will concentrate dirt or foreign matter in the center of the ring.

BLOWBACK: To reverse flow air, steam or fluid through the media to effect solids removal. Sometimes referred to as backwash.

BUNA N: Gasket material. A synthetic rubber frequently used for vessel closures, flanges, and filter elements.

CAKE: Solids deposited on the filter medium during filtration in sufficient thickness to be removed in sheets of sizable pieces. In many cases, cake may provide its own filter media by adding to the surface of media. Also referred to as discharged solids or residue.

CAPACITY: Volume of product which a vessel will accommodate. This is expressed in gallons or similar units. Also amount which will filter at a given efficiency and flow rate, expressed in gallons per minute or similar units.

CARTRIDGE: medium used in a vessel to perform the function of coalescing, filtering, or separating. Also referred to as element, media, repack, etc. Made in a specified physical shape to be mounted by use of hardware designed for that purpose.

CONTAMINANT: Anything in the fluid that should not be there.

CONTAMINATE: The foreign matter in a fluid which is accumulated from various sources such as system dirt, residue from wear of moving parts, atmospheric solids which settle in an open system. Contaminates tend to discolor a liquid, cause additional wear on moving parts, cause system upsets in process stream, or reduce the efficiency of a fluid. Water as well as solid may be considered a contaminate when the presence of water causes adverse results. The presence of contaminates, whether liquid or solid, is the basis on which the use of filters or separator/filters are sought.

CORROSION: The conversion of metals into oxides, hydrated oxides, carbonates, or other compounds due to the action of air or water or both. Salts and sulphur are also important sources of corrosion. Removal of solids and water reduces the effect or speed of corrosion in many cases; and in other cases, corrosion inhibitors are used to reduce the effect of corrosion.

DENSITY: The weight per unit volume of a substance (specific weight).

DEPTH: A filter medium which primarily retain contaminants within the tortuous passages within the depth of the element wall.

DEPTH TYPE FILTRATION: Filtration accomplished by flowing a fluid through a mass filter media provided a tortuous path with many entrapments to stop the contaminates. Flow may be cross flow such as from the outside or inside and then down the center of an element, or from end to end. Certain types of solids, or combinations of solids, do not lend to surface filtration and depth type filtration is found to be more suitable.

DIELECTRIC: A substance which will not conduct electricity. A non-conductor.

DIFFERENTIAL PRESSURE: The difference in pressure between two give points of a filter, separator/filter, etc.

DUAL DENSITY: A depth element that is constructed of two different medias not blended into a homogeneous mixture but remaining as two different distinctive medias.

EFFICIENCY: Degree to which element will perform in removing solids and/or liquids. Output divided by input.

ELEMENT: Medium used in vessel to perform the function of coalescing, filter or separating. Also referred to as a cartridge, repack, etc. The porous device which performs the actual process of filtration.

ELEMENT BY-PASS VALVE: A valve within a filter to limit the differential pressure which can be impressed across the filter element.

EMULSIFICATION: A dispersion of one substance in the form of minute drops within another substance.

EMULSION: A dispersion of fine liquid particles in a liquid stream which do not necessarily dissolve in each other but are held in suspension. Many emulsions may be broken by coalescing the liquids are immiscible. Emulsion stabilizers modify the surface tension of the droplets which makes coalescing difficult, if not impossible.

FILTER: A term generally applied to a device used to remove solid contaminate from a liquid or gas, or separate one liquid from another liquid or gas. A filter, as referred to in the industry today, is a device which removes contaminates. If a device used to remove solids and liquids contaminates, it is referred to in general terms as a separator, separator/filter, or entrainment separator. A filter may be one of a number of such types as replaceable cartridge, cycle, edge, leaf, baffle, plate and frame, precoat and centrifuge. The term filter is sometimes erroneously use to describe the media used inside the vessel or filter case, but the correct use should be filter element, cartridge, etc.

FILTER EFFICIENCY: Expressed as a percent of contaminant introduced to the system, it is the ability of a filter to remove specified contaminants at a given contaminant concentration under specified test condition.

FILTER ELEMENT LIFE: Span of operation from clean unit to a pre-determined pressure drop build up - usually measured in lapsed time.

FLOW RATE: The rate at which a product is passed through a vessel or system: generally expressed as gallons per minute; barrels per hour, barrels per day, actual or standard cubic feet per minute, hour day, etc.

FLUID: A liquid or gas which can be filtered by passing though a filter.

FREE WATER: Water entrained in a lubricating oil or fuel forming two distinct phases with the fluid and having a tendency to separate as a result of the differences in densities.

HOLDING CAPACITY: In general usage refers to the amount of solids, particulate or foreign material one or more elements is capable of retaining up to the terminal or maximum differential pressure. Also can refer to volumetric holding capacity of either a solid or a liquid.

HYDRAULICS: The study of fluids at rest or in motion.

IMPURITY: See "contaminant" - any undesirable material in the fluid.

INDICATOR, BYPASS: An indicator which signals alternate flow.

LACQUER: A natural or synthetic resin which is dissolved in a suitable solvent such as hydrocarbon oil rich in aromatics. When applied, the oil solvent evaporates, leaving behind a lacquer film.

LINE SIZE: The size of line used to carry the product in a system, such as a six inch line.

MICRON: A short unit of length in the metric system. One millionth of a meter, 10⁻⁴ centimeter, 10⁻³ millimeter or 0.000039 of one inch. Used as a criterion to evaluate the performance or efficiency of a filter media or to describe the condition of either the influent or effluent. Usually stated in terms of being either absolute or nominal. Nominal micron rating is generally taken to mean that 98% of all particles over a given micron value have been removed by a specific media or medium. Absolute micron rating is generally taken to mean that all particles over a given micron value have been removed. The naked eye can see a particle 40 microns or larger.

MIGRATION: Contaminant or media released downstream from the filter element.

PREFILTER: Filter for removing gross contaminants before the product stream enters a separator/filter.

PRESSURE ATMOSPHERIC: The force exerted by the atmosphere at sea level, which is equivalent to 14.7 psi.

PRESSURE DIFFERENTIAL: The difference in pressure between two points.

PRESSURE DROP: The difference in pressure between two points, generally at the inlet and outlet of a filter or a separator/filter. Measured in pounds per square inch gage, or inches of mercury.

PRESSURE RATING, OPERATING: The normal pressure at which a filter housing is capable of operating at specified operating conditions.

PRESSURE RELIEF: Valve which permits enough liquid or gas to escape from the vessel to prevent extreme pressure build up within the vessel.

PSI: Pounds per Square Inch.

PSIA: Pounds per Square Inch Absolute.

PSID: Pounds per Square Inch Differential.

PSIG: Pounds per Square Inch Gage.

RATE OF FLOW: The rate at which a product is passed through a vessel or system; generally expressed as gallons per minute, barrels per hour, barrels per day, actual or standard cubic feet per minute, hour day, etc. Same as flow rate.

RATED FLOW: Normal operating flow rate at which a product is passed through a vessel; flow rate which a vessel and media designed to accommodate.

SEPARATION: The action of separating solids or liquids from fluids. May be accomplished by impingement, filtration, or by coalescing. The term "separation" is used in some circles when referring to the separation of liquids. Also used to describe the action in the second stage of two-stage separation.

SEPARATOR: A device whose primary function is to isolate contaminants by physical properties other than size.

SEPARATOR/FILTER: Vessel which removes solids and entrained liquids from another liquid or gas. Uses some combination of a baffle and/or coalescer, filter or separator element. May be single stage, two stage or single or two stage with prefilter section for gross solids removal. Common application is the removal of water from gas or another immiscible liquid. General reference to term applies the equipment is capable of both separation and filtration to specific degrees of efficiencies.

SERVICE LIFE: The length of time an element operates before reaching the maximum allowable pressure drop.

SURGE: The peak system pressure measured as a function of restricting or blocking fluid flow.

SLUDGE: Dirt, carbon, water and chemical compounds as found in oils.

TURBIDITY: Stirred up sediment or contaminant in a fluid.

SOLID SUSPENSION: A mixture of solids suspended in a fluid.

VACUUM: Reference to pressure below atmospheric.

SOLIDS: A mass, or matter, contained in a stream which is considered undesirable and should be removed.

VISCOSITY: Degree of fluidity; property of fluid's molecular structure by virtue of which they resist flow. The resistance of flow exhibited by a liquid resulting from the combined effects of cohesion and adhesion. The unit so f measurements are the poise and the stoke. A liquid has a viscosity of one poise if a force of one dyne per square centimeter causes two parallel liquid surfaces once square centimeter in area and one centimeter apart or move past once another at a rate of once centimeter per second. There are a great many rude and empirical methods for measuring viscosity which generally involve measurement for the time of flow or movement of a ball ring or other object t in a specially shaped or sized apparatus.

SURFACE AREA: Total area of an element that is exposed to approaching flow. See "percent free area".

AERATORS BUILT TO LAST



Our Troubled Waters...

Ponds and lakes, whether they are man made or natural, have a natural life cycle. They start out clean, fresh and clear, grow into middle age with weed and algae growth and high nutrient levels, and pass into old age as shallow bogs or marsh land. Before man began to impact the environment, this progression took hundred and even thousands of years. Ponds and lakes now can be created, live and die within decades. Why are the lives of our ponds and lakes so short? Much of the reason lies in the fact that water is our most abused, and least understood, natural resource.

Algae is a warning that a water quality problem exists. Sludge causes foul odors and depletes oxygen, killing fish and other beneficial aquatic life, and diminishing the water holding capacity of a pond. If left unchecked, a pond will not only become smelly and unsightly, but can gradually turn into a marshy swamp, and eventually into dry land.

Aeration is the key to keeping ponds and lakes functional and free from water quality problems. By bringing oxygen into the water and increasing the circulation, aeration naturally stimulates the water cleanup process and improves the overall quality of the aquatic ecosystem.

WE GIVE NATURE A BOOST

The dramatic increases in oxygen and circulation by Otterbine aerators speed up the biodegrading process of organic waste and fertilizer run-off. The added dissolved oxygen helps the bacteria in the pond or lake break down unpleasant odors and organic waste. The result is cleaner, odor free water.

CALL FOR ALL YOUR POND AND LAKE WATER SOLUTIONS